AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (currently amended) Method for deciding the direction to a flickering source in relation to a measurement point in an electrical network with alternating current with a network frequency (f_c) with low-frequency amplitude variations from the flickering source, ~~characterized in that the method comprises~~ comprising the steps:

- at a measuring point, recording of an amplitude-modulated current signal (i(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the current signal (i(n));

- at the measuring point, recording of an amplitude-modulated voltage signal (u(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the voltage signal (u(n));

- ~~signal processing of~~ demodulating the current signal (i(n)) ~~in such a way that~~ and extracting, from the demodulated current signal, only the low-frequency amplitude variations ~~remain~~ in the form of a flicker component for the current signal (i(n));

- ~~signal processing of~~ demodulating the voltage signal (u(n)) ~~in such a way that~~ and extracting, from the demodulated voltage signal, only the low-frequency amplitude variations ~~remain~~ in the form of a flicker component for the voltage signal (u(n));

- ~~creation of~~ creating a product by multiplication of the flicker component for the current signal and the flicker component for the voltage signal;

- ~~processing of the product in such a way that~~ creating one of an average value of the instantaneous power signal (Π(n)) and a summation of the partial powers Pk wherein a flicker power (Π) is obtained with a sign value that indicates in which direction the flickering source is located in relation to the measurement point; and

- displaying an indication of which direction the flickering source is located in relation to the measurement point.

2.(currently amended) Method according to Claim 1, ~~characterized in that~~ wherein the sign value of the flicker power is negative when the flickering source is located below (19) the measurement point (17) and ~~in that~~ the sign value is positive when the flickering source is located above (18) the measurement point (17).

3. (currently amended) Method according to Claim 1, wherein, ~~characterized in that:~~

- ~~the signal processing of the current signal (i(n))~~ said demodulation of the current signal step comprises the steps:

- creation of a first demodulated signal by demodulation of the current signal (i(n)); and

- filtering, by one of a band pass filer and a multiplication of weight distribution factors, the first demodulated signal to eliminate ~~off of~~ the signals that originate from the network frequency (f_c) in the first demodulated signal ~~in such a way~~ so that only the low-frequency variations remain in the form of the flicker component for current, and [[;]]

- ~~the signal processing of~~ said demodulation of the voltage signal (u(n)) step comprises the steps:

- creation of a second demodulated signal by demodulation of the voltage signal; and

- filtering, by one of a band pass filer and a multiplication of weight distribution factors, the second demodulated signal to eliminate ~~off of~~ the signals that originate from the network frequency in the second demodulated signal ~~in such a way~~ so that only the low-frequency variations remain in the form of the flicker component for voltage.

4. (currently amended) Method according to Claim 3, ~~characterized in that the method comprises~~ comprising the further steps of:

- filtering ~~off of~~ the signals that originate from the network frequency (f_c) in the first demodulated signal in such a way that only the low-frequency variations relating to the flicker component for current remain in the form of a flicker signal ($I_{LF(n)}$) for current;

- filtering off of the signals that originate from the network frequency in the second demodulated signal in such a way that the low-frequency variations relating to the flicker component for voltage remain in the form of a flicker signal ($U_{LF(n)}$) for voltage;

- ~~of the product~~ creating an instantaneous power signal ($\Pi(n)$) by forming a product by multiplication of the flicker signal ($I_{LF(n)}$) for current and the flicker signal ($U_{LF(n)}$) for voltage; and

- ~~of the product being processed by the creation of~~ processing the product to create the average value of the instantaneous power signal ($\Pi(n)$) whereby the flicker power (Π) is created with the sign value.

5. (currently amended) Method according to claim 3, wherein, ~~characterized in that:~~

- the first demodulated signal is created by square demodulation of the current signal; and

- the second demodulated signal is created by square demodulation of the voltage signal.

6.(currently amended) Method according to claim 3, wherein, ~~characterized in that~~ the filtering is carried out with a bandpass filter with a lower limit of 0.1 Hz and an upper limit of 35 Hz~~, but with a preferred upper limit of 25 Hz~~.

7. (currently amended) Method for diagnostics at a measurement point in an electrical network with alternating current with a network frequency (f_c) with low-frequency amplitude variations from a flickering source, ~~characterized in that the method comprises~~ comprising the steps of:

- recording of an amplitude-modulated current signal (i(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the current signal (i(n));

- recording of an amplitude-modulated voltage signal (u(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the voltage signal (u(n));

- frequency analysis of the wave form of the voltage signal (u(n)) by ~~means of~~ an N-point DFT analysis (Discrete

Fourier Transform), ~~which gives rise~~ to determine a voltage vector (U) which contains the frequency spectrum for the voltage signal (u(n)) in the form of N complex voltages;

- frequency analysis of the wave form of the current signal (i(n)) by ~~means of~~ an N-point DFT analysis (Discrete Fourier Transform), ~~which gives rise~~ to determine a current vector (I) which contains the frequency spectrum for the current signal (i(n)) in the form of N complex currents;

- the creation of a power vector (P) by ~~means of the~~ multiplication, element by element, of the voltage vector (U) and the current vector (I);

- multiplication of the power vector (P) by a weighting vector (W) that eliminates the power component that originates from the network frequency, with the power vector (P) comprising partial powers (P_k) concerning power components from the flickering source; [[,]]

- creation of a flicker power (Π) with a sign value by ~~means of~~ summation of the partial powers (P_k); ~~, and~~

- analysis of the sign value, with the sign value indicating in which direction from the measurement point the flickering source is to be found; and

- displaying an indication of which direction the flickering source is located in relation to the measurement point.

8. (currently amended) Method according to Claim 6, ~~characterized in that~~ wherein the flicker power (Π) is created by ~~means of~~ the following ~~steps~~ step:

- summation of the partial powers (P_k) by ~~means of~~ the formula:

$$\Pi = \sum_{k=1}^{N} \mathrm{Re}\left\{\frac{1}{2} W_k \cdot U_k \cdot I_k^{\,*}\right\}$$

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9. (currently amended) Method according to Claim 6, ~~characterized in that~~ wherein the flicker power (Π) is created by ~~means of~~ the following steps:

- square demodulation (x^2) of the voltage signal (u(n));

- square demodulation (x^2) of the current signal (i(n));

- calculation of the frequency spectrum of the square-demodulated voltage signal by ~~means of~~ an N-point DFT analysis (Discrete Fourier Transform) ~~which gives rise~~ to determine the voltage vector (U);

- calculation of the frequency spectrum of the square-demodulated current signal by ~~means of~~ an N-point DFT analysis (Discrete Fourier Transform) ~~which gives rise~~ to determine the current vector (I); and

- creation of the flicker power (Π) by ~~means of~~ summation of the partial powers (P_k) which contribute to the flicker phenomenon by ~~means of~~ the formula:

$$\Pi = \sum_{k=1}^{N} \mathrm{Re}\left\{\frac{1}{2} w1_k \cdot U_k \cdot w2_k \cdot I_k^*\right\}$$

where the elements $w1_k$ and $w2_k$ replace W and eliminate the power component that originates from the network frequency and weight the correct amplitudes of the frequency components U_k and I_k, in accordance with:

$$w1_k = \begin{cases} \frac{1}{U_c} & \textit{for } 1 \le k \le i \\ 0 & \textit{for } k > i \end{cases}$$

$$w2_k = \begin{cases} \frac{1}{I_c} & \textit{for } 1 \le k \le i \\ 0 & \textit{for } k > i \end{cases}$$

where ~~it is assumed that~~ the low-frequency flickers are to be found in a frequency band up to and including tone i ($0 < f_{flicker} \le i$).

10. (currently amended) Arrangement ~~comprising means~~ for deciding the direction to a flickering source in relation to a measurement point in an electricity network with alternating current with a network frequency (f_c) with low-frequency

amplitude variations from the flickering source, ~~characterized in that~~ the arrangement ~~comprises~~ comprising:

- ~~means~~ a first recorder for recording an amplitude-modulated current signal (i(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the current signal (i(n));

- ~~means~~ a second recorder for recording an amplitude-modulated voltage signal (u(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the voltage signal (u(n));

- ~~means~~ a first signal processor for ~~signal processing~~ demodulating the current signal (i(n)) ~~in such a way that~~ and extracting, from the demodulated current signal, only the low-frequency amplitude variations ~~remain~~ in the form of a flicker component for the current signal (i(n));

- ~~means~~ a second signal processor for ~~signal processing~~ demodulating the voltage signal (u(n)) ~~in such a way that~~ and extracting, from the demodulated voltage signal, only the low-frequency amplitude variations ~~remain~~ in the form of a flicker component for the voltage signal (u(n));

- ~~means~~ a multiplier for creating a product by multiplication of the flicker component for current and the flicker component for voltage;

- ~~means~~ a processor for processing the product ~~in such a way that~~ to create one of an average value of the instantaneous

power signal ($\Pi(n)$) and a summation of the partial powers Pk wherein a flicker power (Π) is obtained with a sign value that indicates in which direction the flickering source is located in relation to the measurement point; and

- a display for displaying an indication of which direction the flickering source is located in relation to the measurement point.

11. (currently amended) Arrangement according to Claim 10, ~~characterized in that:~~ wherein,

- the ~~means~~ a first signal processor for signal processing of the current signal (i(n)) comprises:

- ~~means~~ a first part for creating a first demodulated signal by means of demodulation of the current signal (i(n));

- ~~means~~ a second for filtering ~~off~~ to remove the signals that originate from the network frequency (f_c) in the first demodulated signal ~~in such a way~~ so that only the low-frequency variations remain in the form of the flicker component for current;

- the means for signal processing of the current signal (i(n)), comprises:

- means for creating a second demodulated signal by means of demodulation of the voltage signal;

- ~~means~~ a second signal processor for filtering ~~off~~ to remove the signals that originate from the network frequency in

the second demodulated signal ~~in such a way~~ so that only the low-frequency variations remain in the form of the flicker component for voltage.

12. (currently amended) Arrangement for diagnostics at a measurement point in an electrical network with alternating current with a network frequency (f_c) with low-frequency amplitude variations from a flickering source, ~~characterized in that~~ the arrangement ~~comprises~~ comprising:

- ~~means~~ a first recorder for recording an amplitude-modulated current signal (i(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the current signal (i(n));

- ~~means~~ a second recorder for recording an amplitude-modulated voltage signal (u(n)) comprising signals that originate from the network frequency (f_c) and the low-frequency amplitude variations in the voltage signal (u(n));

- ~~means~~ a first signal processor for frequency analysis of the wave form of the voltage signal (u(n)) by ~~means of~~ an N-point DFT analysis (Discrete Fourier Transform), ~~which gives rise~~ to determine a voltage vector (U) which contains the frequency spectrum for the voltage signal (u(n)) in the form of N complex voltages;

- ~~means~~ a second signal processor for frequency analysis of the wave form of the current signal (i(n)) by ~~means~~

~~of~~ an N-point DFT analysis (Discrete Fourier Transform), ~~which gives rise~~ to determine a current vector I which contains the frequency spectrum for the current signal (i(n)) in the form of N complex currents;

- ~~means~~ a multiplier for the creation of a power vector (P) by the multiplication, element by element, of the voltage vector (U) and the current vector (I);

- ~~means~~ a first processor for the multiplication of the power vector (P) by a weighting vector (W) that eliminates the power component that originates from the network frequency, with the power vector (P) comprising partial powers (P_k) concerning power components from the flickering source; [[,]]

- ~~means~~ a second processor for the creation of a flicker power (Π) with a sign value, by summation of the partial powers (P_k); ~~, and~~

- ~~means~~ an analyzer for analysis of the sign value, with the sign value indicating in which direction from the measurement point the flickering source is to be found; and

- a display for displaying an indication of which direction the flickering source is located in relation to the measurement point, wherein,

- the first signal processor is configured to execute the steps of:

- creation of a first demodulated signal by demodulation of the current signal (i(n)), and

- filtering to eliminate the signals that originate from the network frequency (f_c) in the first demodulated signal so that only the low-frequency variations remain in the form of the flicker component for current,

- the second signal processor is configured to execute the steps of:

- creation of a second demodulated signal by demodulation of the voltage signal;

- filtering to eliminate the signals that originate from the network frequency in the second demodulated signal so that only the low-frequency variations remain in the form of the flicker component for voltage.

13. (currently amended) Method according to Claim 2, ~~characterized in that:~~ wherein,

- the signal processing of the current signal (i(n)) comprises the steps of:

- creation of a first demodulated signal by demodulation of the current signal (i(n));

- filtering ~~off of~~ to eliminate the signals that originate from the network frequency (f_c) in the first demodulated signal ~~in such a way~~ so that only the low-frequency variations remain in the form of the flicker component for current;

- the signal processing of the voltage signal (u(n)) comprises the steps of:

- creation of a second demodulated signal by demodulation of the voltage signal;

- filtering ~~off of~~ to eliminate the signals that originate from the network frequency in the second demodulated signal ~~in such a way~~ so that only the low-frequency variations remain in the form of the flicker component for voltage.

14. (currently amended) Method according to claim 4, ~~characterized in that:~~ wherein,

- the first demodulated signal is created by square demodulation of the current signal; and

- the second demodulated signal is created by square demodulation of the voltage signal.

15. (currently amended) Method according to claim 4, ~~characterized in that~~ wherein,

the filtering is carried out with a bandpass filter with a lower limit of 0.1 Hz and an upper limit of 35 Hz~~, but with a preferred upper limit of 25 Hz~~.

16. (new) Method according to claim 3, wherein, the filtering is carried out with a bandpass filter with a lower limit of 0.1 Hz and an upper limit of 25 Hz.

17. (new) Method according to claim 4, wherein, the filtering is carried out with a bandpass filter with a lower limit of 0.1 Hz and an upper limit of 25 Hz.